

September 12, 2008

Chad A. Stobbe
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Iowa Department of Natural Resources
Land Quality Bureau
502 East 9th Street, Wallace State Office Building
Des Moines, Iowa 50319-0034

Subject: Comments pertaining to the Proposed Rule IAC 567 Chapter 108

Dear Mr. Stobbe:

Background

Griffin Wheel Company appreciates this opportunity to provide comments to the Iowa Department of Natural Resources (Iowa DNR) pertaining to the proposed rules entitled "Beneficial Use Demonstrations: Solid By-Products as Resources and Alternative Cover Materials". Griffin Wheel Company understands that you were able to participate by webcast in the Foundry Sand Recycling Forum held in Columbus, Ohio on July 23, 2008 during which results were presented by the US Department of Agriculture concerning the toxicity of foundry sand which boiled down to "Spent Foundry Sand is Cleaner than Dirt". It is in that light that we wish to submit these comments.

Griffin Wheel Company operates three steel foundries in the United States to manufacture curved plate railroad wheels including one in Keokuk, Iowa. The plant primarily generates slag and foundry sand. Griffin Wheel Company manages most of their spent materials within their on-site permitted landfill. That said, Griffin Wheel Company actively seeks out and offers their industrial by-products for beneficial reuse projects. Approximately every four to five years, Griffin Wheel Company's contractor manages metal reclamation on the site to reclaim steel within the slag material.

Iowa DNR's proposed rules conflict with EPA and Iowa DNR efforts for beneficial reuse. In general, Griffin Wheel Company believes that this proposed rule package will impose regulatory requirements on materials generated by industry that are useful in a variety of projects without demonstrating the need to protect human health or the environment. This Iowa DNR strategy appears to be contrary to certain major EPA initiatives. Specifically, Iowa DNR is proposing rules to require foundry sand to be managed as a solid waste when used as a beneficial cover material at solid waste landfills. In contrast, EPA has increased efforts to encourage reuse, recycling, and beneficial use of these materials.

For example, EPA has been working closely with industry and states to establish appropriate uses for spent foundry sand instead of mandating disposal via landfill of this useful material. EPA identifies foundry sand reuse as a strategic effort and "achievement" for the metal casting industry in attaining positive environmental performance. Below is an excerpt from EPA's Metalcasting Sector Strategies Program website, <http://www.epa.gov/sectors/metalcasting/foundry.html>:

A current barrier to foundry environmental performance is the lack of foundry sand reuse. Approximately 10 million tons of sand is generated each year from foundries. The sand, used in the mold-making process, is generally reused directly in the mold-making process, but eventually the sand is no longer structurally suitable for foundry use. The overwhelming majority of this sand is "cleaner than dirt" and can be effectively reused in a variety of ways, including roadbeds, construction fill, and cement manufacture. However, only 1 million tons of sand is currently reused due to inefficient state policies and regulations and undeveloped markets.

In partnership with the Resource Conservation Challenge, the American Foundry Society (AFS) and Foundry Industry Recycling Starts Today (FIRST) Sector Strategies is working to increase reuse of foundry sand. There are both market and state program barriers to increased foundry sand reuse. To address state program barriers, Sector Strategies developed a document in September 2006 titled "State Toolkit for Developing Beneficial Reuse Programs for Foundry Sand". Developed in partnership with the Association of Territorial Solid Waste Management Officials as an assistance tool for states, the guide is designed to help states initiate or revise their beneficial reuse programs in a way that increases safe beneficial reuse of foundry sand. The Toolkit provides program options and concrete examples of a variety of approaches used in states to efficiently conduct beneficial reuse determinations.

Further, the Iowa DNR proposed rules seem to be in direct conflict with Iowa DNR's own stated goals to encourage beneficial use of solid by-products in order to preserve resources, conserve energy, and reduce or eliminate the need to dispose of solid by-products in sanitary landfills. Using solid by-products for fill reduces the need to use new construction materials mined from the earth and should be encouraged, not discouraged, by regulating the activity as sanitary landfills requiring permits. By removing the universally approved beneficial use determination for alternative cover material at solid waste landfills, Iowa DNR is encouraging disposal of the solid by-product rather than beneficial use.

Specific Technical Issues – Griffin Wheel Company offers the following comments on specific portions of the Iowa DNR proposed rule:

Proposed IAC 108.2(1) – Purpose

Griffin Wheel Company recommends striking the new language as it is unclear and vague as to what are reclamation operations vs. activities. Is this the initial processing of the by-product or the reuse activity itself?

Proposed IAC 108.2(2) – Applicability and Compliance

Griffin Wheel Company urges Iowa DNR to leave as cited in current regulation. Such a broad-based general restriction as proposed is overly conservative and will unnecessarily limit potential reuse of foundry sand, a material which is typically cleaner than the native soil it is placed in. Griffin Wheel Company agrees that land application is not appropriate for all industrial by-products. However, such a generic, broadband restriction as proposed is overly protective and will unnecessarily restrict the reuse of clean by-products such as foundry sands.

As you know, Dr. Robert Dungan is Project Manager of the USDA-ARS Foundry Sand Initiative begun in 2002 to specifically address agricultural and horticultural uses of spent foundry sands. In cooperation with The Ohio State University, The Pennsylvania State University, and Purdue University, the USDA-ARS Foundry Sand Initiative has performed extensive scientific experiments to assess the fate and transport of trace contaminants, and the human health and ecological risks posed by those contaminants when using spent foundry sand as an additive or amendment in manufactured topsoil. To date, these scientific experiments have revealed that spent, non-toxic foundry sand can serve as a valuable resource in these applications with little or no evidence of environmental concern.

For example, Dr. Richard Stenhouwer, Associate Professor, Environmental Soil Science, The Pennsylvania State University, College of Agricultural Sciences, concludes in his *"Use of Spent Foundry Sand in Manufactured Topsoils: Assessment of Transport and Availability of Trace Metal and Organic Contaminations and Nutrient Dynamics in the Topsoil Environment"* that "the results of this greenhouse column experiment with spent foundry sand and compost based manufactured soils indicates no potential environmental concerns with such uses of these types of SFS (spent foundry sands)".

Proposed IAC 108.3 – Definitions

Griffin Wheel Company believes the following should be inserted:

Slag – a by-product of the production of iron & steel formed as a molten liquid solution of silicates and oxides that solidifies upon cooling.

Proposed IAC 108.4 – Removal of Use of Solid By-Products as Alternative Cover Material at Solid Waste Landfills

The proposed rule at 108.4(6) includes removing the approved use of solid by-products as alternative cover at sanitary landfills. The use slag and spent foundry sand is ideal for daily and intermediate cover at sanitary landfills for a variety of reasons. Cover material at sanitary landfills is needed to control fire hazards, blowing litter, odors, and vectors.

Spent foundry sand is generated from high heat industrial processes, which, by definition, means that foundry sand will control fire hazards at sanitary landfills. Foundry sand is dense material and contains binders. It is not a dusty material and, therefore, controls blowing litter. Foundry sand is odorless, non-putrescible, and is not nutritional to vectors.

Requiring a beneficial use determination application per IAC 108.7 is unnecessary and burdensome for companies when foundry sand obviously meets the performance criteria included within that standard. Iowa surely has enough experience to date with the use of foundry sand as alternate daily cover to approve this use.

Spent foundry sand serves as a gritty substitute for native gravel and stone. It makes good environmental and economic sense to use spent foundry sand rather than fresh soil since it saves the natural resources for final cover. It saves fuel, it lowers costs for landfill construction, and it means we will not deplete stocks of valuable natural resources as quickly for future generations.

To regulate reuse under permit conditions will reduce the reuse opportunity since it ties the sanitary landfill operator's hands until the permit is issued.

Further, Griffin Wheel Company believes IAC 108.4(6) should include the following to the list of universally approved beneficial use determinations:

- Structural fill such as support for roadways, parking lots, buildings, and pieces of equipment
- Backfill for concrete foundations
- Raw material in plastic products
- Raw material in glass, ceramics, and rockwool
- Compost amendments pursuant to 567-Chapter 105
- Raw materials in the manufacture of aggregate
- Sand blasting or a raw material in the manufacture of abrasive products
- Alternative cover material at a sanitary landfill

Proposed IAC 108.4(12) – Slag from foundries should be included, by name, as “rubble” since this solid by-product has the same physical and chemical characteristic as small stone.

Proposed IAC 108.4(17) – Griffin Wheel Company commends Iowa DNR for including slag in the list of by-products with universally approved beneficial uses. However, this category should not be limited to EAF slags, but more broadly defined as iron & steel making slags. This will allow for the reuse of blast furnace, basic oxygen furnace, cupola, induction furnace slags generated from iron & steel production while excluding slag from non-ferrous operations.

Proposed IAC 108.5 – Testing, Reporting, and Storage Requirements

Griffin Wheel Company recommends keeping existing regulations. The proposed changes seem to be written from the perspective that all by-products are suspect and that additional testing is required to reuse material, even beyond what is required under RCRA for hazardous waste. Griffin Wheel Company believes that by-products regulated under this rule should already be considered preferred reuse materials. Preferred materials, by nature and consistency of the processes producing them and their industry-wide characteristics, have a proven history of being safe for a wide array of reuses. As such, these materials should afford a more streamlined approval process.

Requiring analysis for the constituents found in 40 CFR 261 Appendix VIII is onerous and not necessary to protect human health and the environment. There are approximately 450 constituents or chemical families on that list within the hazardous waste rules. Foundry sand is not a hazardous waste.

The ultimate goal in this process is to promote the reuse of industrial by-products while still protecting human health and the environment. Iowa DNR should have at hand numerous position papers to assist it in its ability to balance these two goals. One such source, “Excess Foundry Sand Characterization and Experimental Investigation in Controlled Low-Strength Material and Hot-Mixing Asphalt” prepared for U.S. Department of Energy, October 2004 by P.J. Tikalsky, H. U. Bahia, A. Deng and T. Snyder, in the conclusion notes states:

“In summary, the compositions of most regulated metallic elements in excess foundry sand are less than or in the same level as those of soil, with the exception of copper-based facility excess foundry sand. These have higher concentrations of lead and copper. Hence, excess foundry sands do not typically pose more threats to environment than soil.”

Please keep in mind that Griffin Wheel Company, a steel foundry, generates spent sand with little to no leachable lead and copper and, therefore, believes that our spent sands are “Cleaner than dirt”, as reported by the US Department of Agriculture.

Proposed IAC 108.6 – Removal of Use of Solid By-Products in Fill Projects as Beneficial Use Projects

Griffin Wheel Company recommends retaining the existing rule. The proposed rule to regulate solid by-products per sanitary landfill permits when reused for structural fill will effectively put an end to all such reuse projects in the state. In situations, such as with foundry sands, where the by-product is cleaner than the surrounding soil, such onerous requirements are not only unnecessary to protect the public health, but are a disincentive to reuse.

Griffin Wheel Company agrees that filling ravines and gravel pits requires oversight by the Iowa DNR, however, some fill projects, such as structural fill for erecting buildings, road beds, embankments should not be considered land application/disposal of solid wastes. Numerous structural fill projects using both spent foundry sand and slag in several states are successful with no adverse impacts on human health and the environment. Slag and foundry sand have been reused for decades in such manner. In case you have not seen the recently published Foundry Industry Benchmarking Survey entitled *Industry Practices Regarding the Disposal and Beneficial Reuse of Foundry Sand*, Griffin Wheel Company has attached the publication to this letter. The publication reports that the majority of reuse projects is for construction fill projects. Construction projects that reuse spent sands and other solid industrial waste usually have short lead-times leaving no time for obtaining solid waste permits, let alone the fact that construction contractors have little to no experience with environmental regulatory permitting. To regulate the reuse of these materials under current landfill rules will put an end to future reuse projects of this type in the state of Iowa. Griffin Wheel Company therefore requests that Iowa DNR reconsider its language in removing the approved use of foundry sand as fill material from 108.4(6). If it is the characteristic of some other by-product which is leading the agency to make such drastic revisions, Griffin Wheel Company recommends that those other by-products be excluded from reuse under this rule instead of penalizing all by-products from safe and legitimate reuse opportunities.

Proposed IAC 108.7 – Record Keeping and Reporting Requirements for Beneficial Use Projects Other than Alternative Cover Material

Once again, Griffin Wheel Company believes the agency has gone so far in an effort to be overly protective that this regulation becomes a disincentive to manage the by-product in an environmentally preferred manner. As stated earlier in this letter, the use slag and spent foundry sand is ideal for cover at sanitary landfills for a variety of reasons. Daily and intermediate cover material at sanitary landfills is needed to control fire hazards, blowing litter, odors, and vectors. Foundry by-products have the physical characteristics to perform all of these necessary functions without the need to find natural resources, such as unused sand, gravels, and dirt.

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Griffin Wheel Company looks forward to working with the Iowa DNR to develop a stakeholder workgroup in developing the revised proposed rules. This will allow Iowa DNR to integrate the positive achievements that have been accomplished through the existing regulations into the new rules.

If you have any questions regarding these comments or would like to discuss our concern, please feel free to contact me at (319) 524-2962.

Sincerely,

Paul R. Sheppard
Environmental Specialist

Attachment: Industry Practices Regarding the Disposal and Beneficial Reuse of Foundry Sand

Foundry Industry Benchmarking Survey

Industry Practices Regarding the Disposal and Beneficial Reuse of Foundry Sand

Results and Analysis



August 2007

Beneficial Reuse of Fluidity Sand—Results and Analysis

Industry Practices Regarding the Disposal and

Waste Disposal

2000 Survey of Respondents = 144; completion rate



The majority of respondents produced grey sand, with a small number of respondents producing white sand. The majority of respondents produced grey sand, with a small number of respondents producing white sand. The majority of respondents produced grey sand, with a small number of respondents producing white sand.

Fluidity Sand—Tons of Sand Purchased
Total quantity of sand purchased (all types)

Percentage of Respondents	Range
10.4%	0-10,000
25.0%	10,001-25,000
18.8%	25,001-50,000
12.5%	50,001-100,000
33.3%	100,001+

The data shows that the majority of respondents are located in the Midwest and South. The majority of respondents are located in the Midwest and South. The majority of respondents are located in the Midwest and South.

As part of the industry sand disposal survey, the American Foundry Society (AFS) conducted a mail survey of the industry. The survey was designed to provide information on the current status of sand disposal practices in the foundry industry. The survey was conducted in 1999 and the results are presented in this report. The survey was conducted in 1999 and the results are presented in this report. The survey was conducted in 1999 and the results are presented in this report.

Introduction

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Foundry Industry Benchmarking Survey

Industry Practices Regarding the Disposal and Beneficial Reuse of Foundry Sand—Results and Analysis

As part of its foundry sand beneficial reuse initiative, the American Foundry Society (AFS) has undertaken a multi-year data gathering effort to quantify the amount of sand available for reuse, characterize current reuse practices, and identify specific barriers. The results of the survey will help AFS continue its work to expand reuse opportunities. The following report summarizes the results of this survey effort.

Methodology

The survey instrument was developed with input from the AFS Water Quality and Waste Disposal Committee (10-F), the National Center for Manufacturing Sciences (NCMS), and the U.S. Environmental Protection Agency (EPA).

AFS executed an aggressive distribution effort by mailing surveys to nearly 1,100 facilities, posting an electronic version on the AFS website's homepage, and promoting survey participation at various conferences and industry meetings.

In order to obtain a geographically-representative sample of responses, AFS developed participation goals for key states to ensure we received completed surveys from at least 10% of the state's foundries. AFS worked closely with state-level foundry associations in order to meet this target.

The survey was conducted from 2005 to 2007 in which AFS collected data from the previous calendar year (i.e. 2004 to 2006). The data from all years was combined in order to look at the results based on a larger number of foundries. Please note that some facilities did not respond to all the survey questions and therefore, the total number of responses for any particular question may be less than the total number of respondents.

Data Summary

244 Total Respondents = 24% completion rate



The majority of respondents produced grey iron castings with ductile iron and carbon low alloy coming in second and third, respectively.

Foundry Size – Tons of Sand Purchased

Total quantity of sand purchased (all types combined)

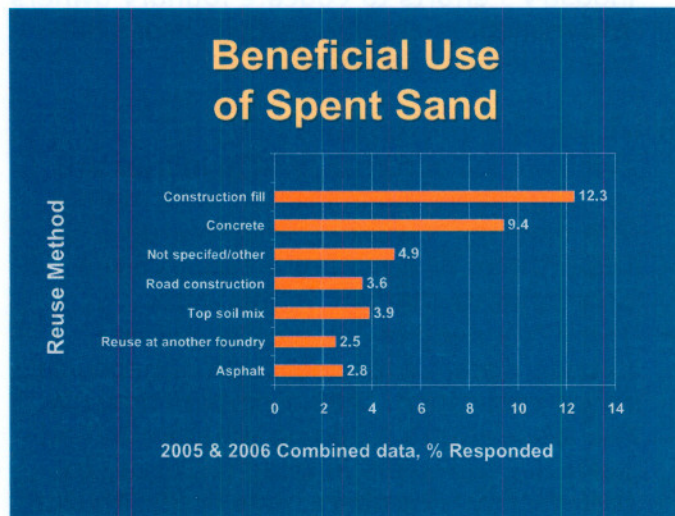
Range	Percentage of Foundries
<1,000	37.3%
1,000 – 10,000	39.8%
10,0001 – 100,000	16.4%
>100,000	2.5%

This data shows that the survey pool is representative of different sized foundries in terms of how much sand is purchased.

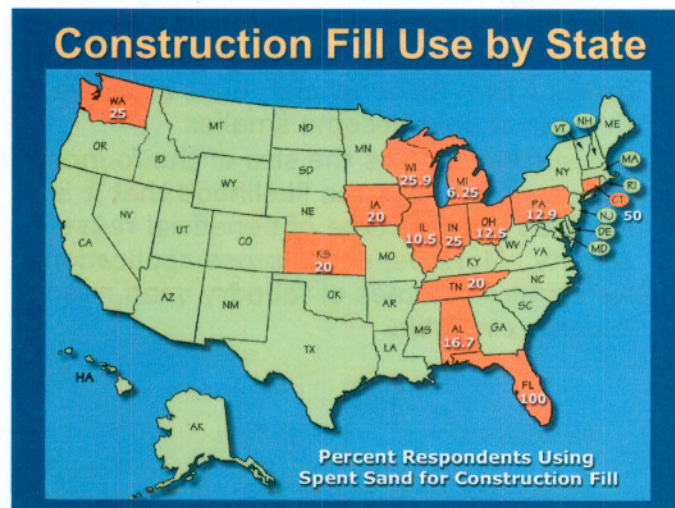
Beneficial Reuse Applications

Quick Facts:

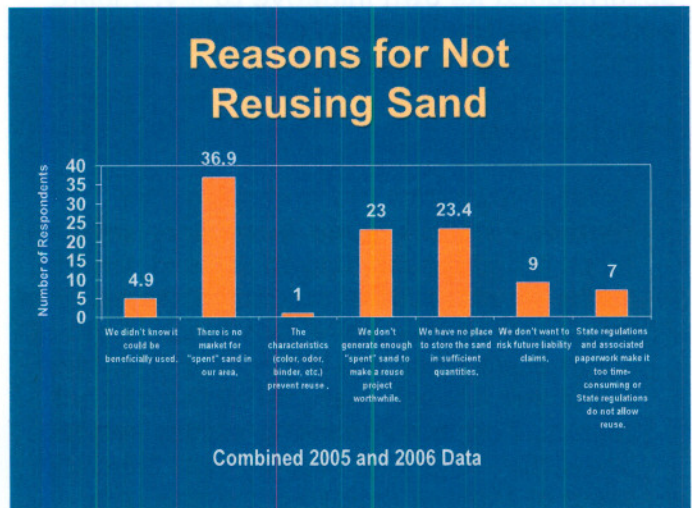
- On average, survey respondents purchased 9,131 tons of sand per year.
- On average, survey respondents beneficially reused 3,281 tons of sand per year. (NOTE: Excludes landfill cover as a beneficial reuse application)
- The industry beneficially reuses 2.6 million tons of sand per year - 28.18% of the total tons of sand available for reuse.*



Survey respondents indicated that construction fill and Portland Cement/Concrete were the most frequent beneficial reuse applications (excluding landfill cover). The average hauling distance for those beneficially reusing their sand in construction fill applications was only 17.9 miles.



Barriers to Beneficial Reuse



The most commonly cited barrier to beneficial reuse is the lack of a market for used foundry sand around the respondent's facility. Other commonly cited barriers were: 1) lack of a place to store the sand in sufficient quantities; and 2) not generating enough sand to make a reuse project worthwhile. AFS has been working to address these reuse barriers through its mapping program (see conclusion) and an industrial recycling guide titled, "Turning Your Used Foundry Sand into a Marketable Resource: Best Management Practices for Beneficial Reuse."

Case Study



Indiana, one of the nation's largest foundry states, is also home to many potential foundry sand beneficial reuse opportunities such as cement kilns, highway construction as well as asphalt and ready-mix concrete plants among others.

The AFS mapping program shows there are significant clusters of these types of manufacturing facilities in cities like Gary, Indianapolis, South Bend, and Clarksville (near Louisville, KY).

* Excludes landfill cover as a beneficial reuse application. A telephone survey of non-respondents to the original survey revealed that non-respondents beneficially reused sand at a rate lower than that of the survey respondent group, approximately 29% lower. The extrapolation method assumed that the non-respondent group was identical in all respects to the respondent group, except with respect to beneficial reuse of sand, which was adjusted lower.

The Indiana Cast Metals Association (INCMA) spearheaded its own initiative to investigate and address the barriers to beneficial reuse facing Indiana foundries.

Main Barriers:

1. Smaller foundries blocked out of the market – INCMA found there were several large foundries sending their used sand to various cement kilns around the state. The smaller foundries were thus blocked out of the market since the larger foundries were supplying enough material to the cement plants. The benchmarking survey results show that 62.5% of respondents from the state of Indiana indicated the lack of a market for used foundry sand was a barrier to beneficial reuse.

The aggregate producers (suppliers to cement kilns, asphalt and ready-mix concrete plants) also view foundry sand as a competitor and have worked diligently to keep foundry sand out of their markets by convincing producers not to use what they consider an "industrial waste."

2. Minimal waste disposal costs – Another barrier to beneficial reuse efforts in Indiana stems from the fact that waste disposal costs are minimal, making it hard for foundries to justify the start-up costs involved in organizing a comprehensive beneficial reuse program.

INCMA, in an effort to address these problems, engaged in an aggressive campaign to educate county and local officials about the beneficial reuse of foundry sand and also to encourage them to open doors for smaller reuse projects. In addition, the association is looking at different ways small to medium sized Indiana foundries could combine their used sand and send it to a broker for processing and distribution.

Conclusions

The good news . . .

- There are examples of beneficial reuse projects occurring in foundries across the United States. The industry-supported non-profit, Foundry Industry Recycling Starts Today (FIRST), has catalogued several case studies on its website (www.foundryrecycling.org).
- Only 4.9% of respondents indicated they did **not** know foundry sand could be beneficially reused. This indicates that the industry's efforts to educate foundry owners and managers about beneficial reuse have been relatively successful.

What needs improvement . . .

- Only a small percentage of foundries are reusing their sand in the top soils market. The industry is waiting, however, on U.S. Department of Agriculture research that may open up markets in this area.
- There is a need to reduce the average hauling distance for each type of beneficial reuse application. AFS members now use the association's mapping program to find potential end-users in close proximity to their facility. Members have access to this program via the AFS website.
- Inexpensive waste disposal costs can make it more attractive for foundries to dump sand in a landfill instead of beneficially reusing it either on or off-site. States should consider financial incentives for foundries who engage in beneficial reuse activities.
- Currently, foundries are purchasing more than three times as much sand as they are beneficially reusing. As the industry moves forward with its beneficial reuse initiative, this gap should become smaller.
- Not surprisingly, as the size of the foundry increases, so does the likelihood that it is involved in some type of beneficial reuse activity. More beneficial reuse applications for smaller volumes of foundry sand need to become available.